Columbia River Toxics Reduction Work Group
Monitoring and Research Subcommittee

Monitoring

Problem: Lack of comparable information on where and in what concentrations toxics are present in the Basin.

Goal: Contribute to the overall goal of the working group to reduce toxics in the Columbia River Basin by establishing a phased and coordinated interagency (Federal, Tribal, State, local, nongovernmental) monitoring network within the Basin.

Rationale: A monitoring network is needed in the Basin for several reasons: 1) identify sources of toxics; 2) estimate loadings of toxics; 3) establish spatial and temporal trends for toxics; 4) provide information to evaluate potential effects on human health from eating fish (e.g., establishing fish advisories); and 5) provide environmentally relevant concentrations to evaluate effects on aquatic organisms from toxics; and 6) provide information to evaluate potential effects on wildlife eating contaminated fish.

Subgoals:

1. Complete a "data gaps" analysis of the Basin's contaminant data collected from 1994 to the present. This work would be conducted in a fashion similar to the 1994 Bi-State water quality report (USGS-WRI 95-4249) which examined historical water quality through 1994. This data gaps analysis would entail use of multi-agency data to evaluate contaminant occurrence and distribution and ultimately gaps (both geographic and constituent) in coverage basin wide.

2. Determine the geographic scope for monitoring--
Although planned to be discussed at the opening of the meeting, our subgroup will additionally consider an earlier discussion of geographic scope. While it would be ideal to establish a monitoring network throughout the Basin, our subcommittee may want to narrow the scope based on the following criteria:

- Do not include areas where significant work is all ready underway or planned such as Upper Columbia River Site, Portland Harbor, the Willamette, area around Hanford, and the Yakima. We would need to make sure we are coordinated with these other efforts.
- Focus monitoring at the mouths of the main tributaries and work back up the tributaries in the future if problems are detected. We will need to select major tributaries to efficiently concentrate our efforts.
- Snake River should be included because of its volume, geographic area, and known lack of data. The subcommittee will need to discuss to what extent it would be included.

3. Determine which contaminants would be monitored—
The selection of target contaminants will also be discussed at the opening of the meeting. We will put forth a listing modified from the Columbia River Toxics Reduction "Contaminants Work Group" –the product of several meetings earlier this year. The contaminant listing is as follows:

DDT (and organochlorines), PCBs, Mercury, and PBDEs --expand to include PAHs
Trace elements (including arsenic, copper, and lead)
Dioxins/furans
Currently used pesticides (organophosphates, carbamates, triazine herbicides, fipronil)
Estrogenic compounds

The following groups would fall under the area of research and could be included in monitoring if appropriate but would not be the main focus

Pharmaceuticals and Personal Care Products
Other wastewater compounds (plasticizers, detergents, surfactants)
Hormones
Synthetic pyrethroids
Phthalate

4. Determine the media to sample—
Tables were developed for our subgroup to interactively complete during our breakout session on Sept. 30. The purpose is to identify the appropriate sample media to address our monitoring goals. Several tables were developed, each representing a contaminant class and each asks us to identify the appropriate sample media as well as, the purpose (rationale) for sampling (specifically: source id, loads, trends, human health or aquatic life). **The file is attached as a separate EXCEL file**.

5. Determine the monitoring frequency (may very among media)--
The table developed by the "Contaminants Work Group" started to address this issue. This topic will require more discussion in a future subgroup meeting.

6. Determine the locations for the monitoring sites--
This topic will require more discussion in a future subgroup meeting and will include:

1. Role of fixed station, monthly water quality sampling with continuous streamflow monitoring.
2. Role of seasonal or timing "synoptic samplings": many stations to paint a snap shot aquatic health.
3. Role of "rotating-panel design sampling": a statistic approach to trend analysis.
4. Role of targeted sampling vs. random site selection
5. Others?

(Our initial task would simply be to flesh out the possible monitoring approaches. Then discuss the pros and cons of each, come to consensus on one or two, or some combination of approaches that work best for our monitoring program)

7. Identify ancillary data, either required or that would be nice to have at each site.
This topic will require more discussion in a future subgroup meeting. Discussion topics could include:

1. Streamflow for loads/trends; continuous turbidity, specific conductivity, pH, etc.
2. Land use data
3. Pesticide use reporting data
4. Personnel care product "chemical disclosure data"
5. Fish life history information
6. Others?

8. Recommend sampling techniques for various media.
This topic will require more discussion in a future subgroup meeting. Discussion topics could include:

1. Traditional water quality sampling methods (depth/wide integration, grab samples, point samples).
2. Use of passive samplers (SPMDs, POCIS)
3. Appropriate chemical extraction methods (total vs. partial extraction for trace elements, for example)
4. Target taxa for tissue (including discussions on filets, whole body, target organs, histopathology, etc)
5. Others ?

Research

Problem: There is not a focused research program, specific to the Columbia Basin, that will develop the needed information to support a monitoring program and to help identify problems and focus efforts to reduce toxics.

Goal*:* Further our understanding of contaminants in the environment and their relation to the foodweb by developing an integrated research plan that focuses on issues specific to the Columbia Basin. The plan would focus on several specific research topics (for example, PBDEs concentrations in Osprey eggs in the Columbia Basin) that can be addressed by scientists within the Region (NOAA Fisheries, EPA Corvallis lab, USGS Science Centers, and others).

Rationale: While some research is being conducted by different agencies on toxics in the Columbia Basin, there has not been a coordinated effort to identify the highest priorities for research. The development of such a plan ultimately would help develop a better understanding of the research questions that need to be answered in order for different agencies to fulfill their mandates.

Focus on Local Research: The focus on local issues by local researchers is meant to set some boundaries around the scope of the research plan. For example, developing human health criteria or benchmarks for emerging contaminants are critical for evaluating whether the concentrations we are seeing in the environment are of concern. However, this type of research and evaluation is best completed on a National scale. We need to identify National scale work, but focus our research plan on local issues within the Basin.

Sub-goals:
For this session, we thought the following format could be followed:

1. Identify areas where research is needed.

A. Local Research needs:
   1. Fate and transport of contaminants especially mercury
   2. Identification of important biomarkers for use in future monitoring.

B. National Scale Research needs
   1. Effects-based criterion and/or benchmarks for human health, wildlife, and aquatic life.
   2. Development of new analytical methods (ie emerging or new contaminants of concern)

Data Management

After long discussion, the subgroup decided that we needed more information prior to making any decisions on how to move forward with data management. In order to start that conversation, at the beginning of the meeting we will have a presentation by Helen Rueda on the data base she has created and then have Jen Bayer and Sean Quigley from PNAMP provide the group with a better understanding of what they are doing and how we might be able to work together.